

Notice of Allowability

Application No.

10/539,038

Examiner

Rip A. Lee

Applicant(s)

SATOH ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to September 21, 2006.
2. ☒ The allowed claim(s) is/are 1-5 and 7-11.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Thomas J. Siepmann on November 20, 2006.

Cancel claim 6.

Other amendments:

Page 4, Claim 3, line 8	replace "and" with "or"
Page 5, Claim 4, line 5	replace "and" with "or"
Page 5, Claim 5, line 2	replace "using" with "in the presence of"
Page 7, Claim 7, line 3	replace "and" with "or"
Page 7, Claim 7, line 11	replace "and" with "or"
Page 7, Claim 7, line 12	replace "and hafnium" with "or hafnium"

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: Claims 1-5 and 7-11 are allowed over the closest references cited below.

The present invention is drawn to an ethylene/C₄ to C₁₀ α -olefin copolymer having the following properties: (i) MFR (2.16 kg, 190 °C) in the range of 1.0-50 g/10 min, (ii) LNR defined as scale of neck-in upon film molding in the range of 0.6-1.4, and (iii) take up speed at break [DS (m/min)] at 160 °C and MFR satisfy the relationship $12\text{MFR}^{0.577} \leq \text{DS} \leq 165\text{MFR}^{0.577}$. Polymers of the invention are prepared in the presence of a catalyst comprising a group 4 complex containing at least one ligand having a cyclopentadienyl skeleton, an organoaluminumoxy compound, and a multifunctional organic halide of formula $(\text{Q}^1)_o\text{-R-(Q}^2)_p$, where Q¹ and Q² each represent -OH, -NH₂, or -NLH, and R is a (o + p) valent group containing at least one halogen atom.

Kurtz *et al.* (U.S. 4,339,507) discloses a series ethylene-butene copolymers exhibiting a MFR of about 28 g/10 min and densities on order of about 0.92 g/cm³. Extruded films exhibit a neck in (total inches) of 1.85, 1.65, and 1.53 at 21#/ream, 15 #/ream, and 7#/ream, respectively. Clearly, the prior art does not teach the polymer of the instant claims.

The series of patents, Oshima *et al.* (U.S. 6,870,015), Takaoki *et al.* (U.S. 6,586,356, 6,528,596, and 6,914,108), Ogane (U.S. 7,022,782), and Oghane *et al.* (U.S. 6,284,699) relate to preparation of polymer in the presence of a supported catalyst comprising a transition metal component, and a monofunctional organic halide comprising one -OH or -NH₂ group. In contrast, the inventive component described in the instant claims is a multifunctional organic halide of formula $(\text{Q}^1)_o\text{-R-(Q}^2)_p$ that contains at least two -OH or -NH₂ groups (or a combination thereof). It can be seen that the prior art does not teach the catalyst described in the instant claims, and one of ordinary skill in the art would not have found it obvious to modify the catalysts of the prior art accordingly. With regard to the polymer product, one of skill in the art would have no reasonable basis to expect that the polymer of the prior art is the same as that recited in the instant claims.

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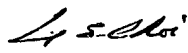
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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November 20, 2006


LING-SUI CHOI
PRIMARY EXAMINER